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AMC/SCYN ltr dtd 29 May 1998

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REPORT
of

THE ARMY AIR FORCES BOARD

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Unclassified
Ltr HQ. A.A.F. 28/2/46
AAF Bd, Orlando, Florida

MASTER FILE

RETURN TO
AAF BD FILE
ORLANDO, FLA.

Classification Changed
To Unclassified Letter AG 461.30
dated 28/2/46 (47)

SUBJECT

SUITABILITY OF THE B-17 AIRPLANE FOR TROOP CARRIER OPERATIONS

PROJECT No. (M-1) 120 3672

DATE

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THE ARMY AIR FORCES BOARD
Orlando, Florida

16 August 1944

ARMY AIR FORCES BOARD PROJECT NO. (M-1) 120

SUITABILITY OF THE B-17 AIRPLANE FOR TROOP CARRIER OPERATIONS

I. OBJECT

To determine the suitability of the B-17 airplane for troop carrier operations.

II. FACTUAL DATA

a. Test of the B-17 airplane as a tow airplane was requested by a TWX from Headquarters Army Air Forces, Washington, D. C. dated 12 May 1944.

b. A B-17F airplane equipped with a Model 160X pick-up unit was made available for this project.

c. Tests were conducted at Laurinburg-Maxton Army Air Base on the B-17F airplane towing respectively, the CG-13A glider, the Horsa glider and two CG-4A gliders. Information was obtained on the length of take-off run, the service ceiling, the best operational altitude, the best climbing speed, the power settings for climb and cruise, and the radius of action of the various combinations.

d. At the conclusion of the towing tests, the airplane was flown to Camp Mackall, N. C. where tests were conducted by the Airborne Center to determine the suitability of the B-17 airplane for carrying personnel or equipment and for jumping paratroopers.

III. CONCLUSIONS: It is concluded that:

a. The B-17 airplane is not suitable for troop carrier operations.
b. The B-17 airplane is not suitable as a glider tow plane, but can be used as an alternate tow plane when other airplanes with better tow characteristics are not available.
c. The B-17 airplane is not suitable for carrying equipment or dropping paratroopers, but can be used for air landing of personnel.

IV. RECOMMENDATIONS: It is recommended that:

a. The B-17 airplane be considered not suitable for troop carrier operations.
b. The B-17 airplane be used as a glider tow plane only when other airplanes with better towing characteristics are not available.

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V. DISCUSSION

a. When considering the suitability of the B-17 airplane for troop carrier operations, it was assumed that combat airplanes would be used and diverted for this type of work only for the length of time necessary to perform the mission. For this reason a stripped B-17 airplane was not tested. However, a B-17F airplane stripped of 4,000 lbs. of armor, armament and turrets is being used for towing gliders by the Glider Branch, Aircraft Laboratory, Wright Field, Dayton, Ohio, and has proved satisfactory as a tow plane.

b. The B-17F grossing 55,180 lbs. was tested, towing respectively, one CG-13A glider grossing 16,500 lbs., one Horsa glider grossing 15,000 lbs., and two CG-4A gliders grossing 7,500 lbs. each. Take-offs were made using various flap settings, and it was found that the shortest take-off runs could be made by putting the flaps down one third (15°) as soon as an airspeed of 80 m.p.h. was obtained on the take-off run. The take-off distance was found to be approximately 4250 feet for all combinations and an additional 1500 ft. was needed to clear a 50 ft. obstacle.

c. When towing the various combinations, the airplane had to fly at a very high angle of attack both while climbing and in level flight. Restricted forward visibility from the pilot's compartment is the result of this flying attitude. The restricted forward visibility and high angle of attack attitude of the B-17 airplane when towing either two CG-4A gliders or one CG-13A glider would make flying in a troop carrier formation impracticable.

d. The loading of the B-17F airplane and the gliders was carefully supervised to make certain that the center of gravity of each aircraft was always within the allowable limits.

e. Ground temperatures during the tests varied from 26°C to 36° C, and in all tests the cylinder-head temperatures and oil temperatures were within the allowable operating limits as prescribed in the B-17F Handbook of Operating Instructions.

f. The following data were compiled from the various flight tests with the B-17F airplane loaded with 1730 gallons of gasoline, a crew of 10 men and 1500 lbs. of sand bags to simulate the ammunition load. The Model 160X pick-up unit weighed 2,600 lbs., making a gross weight for the B-17F of 55,180 lbs.

	CG-13A Glider	Horsa Glider	2 CG-4A Gliders
Gross weight	16,500#	15,000#	7,500# each
Average Take-off distance	4,250'	4,250'	4,250'
Estimated additional distance to clear 50 ft. obstacle	1,500'	1,500'	1,500'
Best climbing speed of combination	125-130mph	125-130mph	125-130mph
Best operational altitude	4,000'	4,000'	4,000'
Service ceiling*	10,000'	10,000'	10,000'
Cruising speed at 4,000'	135 mph	130mph	125mph
Radius of combination in still air with one hour of fuel reserve	450 miles	435 miles	420miles

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*Service ceiling limited to 10,000 ft. because no oxygen is available in glider. The tow plane was still climbing better than 100 ft./min. at 14,000 ft.

g. Take-offs were made using 46" Hg and 2500 R.P.M. and all climbs were made using 39" Hg and 2300 R.P.M. During the range tests it was found that it was necessary to hold 34" Hg and 2200 R.P.M. for the first hour of cruise and then it was possible to reduce the power to 33" Hg and 2150 R.P.M. for the second and third hours of cruise. Any power settings lower than the above resulted in the airspeed decreasing to a dangerously low figure. The airspeed readings for cruise given in paragraph 6 above will be less in turbulent air conditions. Another factor affecting the speed of the combination is the position on tow flown by the glider pilots. If an incorrect position is flown the speed of the combination will be decreased by 10 to 15 m.p.h.

h. No pick-ups were made with the Model 160X pick-up unit, as the acceptance tests on the unit had not been completed at the time the tow tests were run.

i. At the completion of the tow tests, the airplane was flown to Camp Mackall, N.C. where the Airborne Center investigated the suitability of the B-17 airplane for airborne operations. No paratroopers were dropped and no equipment was loaded on this occasion because the Airborne Center had loaded all their equipment in a B-17 in an earlier test. The full report of the Air-borne Center is attached as Inclosure 2. It was concluded that the B-17 airplane is not suitable for mass parachute jumps without extensive modifications. It is also concluded that the B-17 could be used as an emergency air landing cargo airplane, but that it was undesirable for the reasons stated in paragraph b (4) of Inclosure No. 2.

VI. INCLOSURES

a. Inclosure No. 1 - TWX from Headquarters Army Air Forces, Washington, D.C. dated 12 May 1944.

b. Inclosure No. 2 - Ltr. from Hq. Airborne Center, Camp Mackall, N.C. dtd 6 Jul 44, subj. "Test of B-17 Airplane for Airborne Use."

PREPARED BY:
V. A. RUX, Major, Air Corps, Special Branch, Aircraft Division, AAF Bd

CONCURRED IN BY :
D. DIVINE,II, Colonel, A.C., Chief, Aircraft Division, AAF Board
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C. F. DAMBERG, Colonel, A.C., Executive, AAF Board.

APPROVED:
For the Army Air Forces Board:

E. L. EUBANK
Brigadier General, U.S.A
President

OFFICIAL:
GUSTAV A. NEUBERG
Lt. Col., AGD
Recorder

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RECEIVED AT : SIGNAL CENTER A.A.F.S.A.T. ORLANDO, FLA.

FROM: WAR DEPT. WASHINGTON, D.C. 12 May 1944

TO: COMMANDING GENERAL

AAF TACTICAL CENTER

ORLANDO, FLA.

AAF BOARD IS REQUESTED TO ALSO INCLUDE SUITABILITY OF THE BAKER DASH SEVENTEEN AS A TOW FOR CHARLIE GEORGE DASH THIRTEEN ABLE GLIDER IN PROJECT PRESENTLY BEING CONDUCTED AT MAXTON AIR BASE PD REFERENCE MADE TO DIRECTIVE EIGHT MAY CMA SUBJECT OPERATIONAL SUITABILITY CHARLIE DASH FOUR SIX TOWING CHARLIE GEORGE DASH THIRTEEN ABLE GLIDER PD PAREN WAR THREE FIVE TWONINE FIVE TO EUBANKS SIGNED ARNOLD PAREN BAKER DASH SEVENTEEN WITH MODEL ONE SIX ZERO XRAY PICK UP UNIT ARRIVE MAXTON ABOUT FIFTEEN MAY FOR TEN DAY PERIOD PD REQUEST RECOMMENDATIONS TO PRACTICABILITY OF USING BOTH AIRCRAFT FOR JUMPING PARATROOPERS

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Unannounced ☑
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Availability Codes
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Incl 1
S#5410-4

HEADQUARTERS AIRBORNE CENTER
ARMY GROUND FORCES
Camp Mackall, North Carolina

452.1-GNVDT 6 Jul 1944

SUBJECT: Test of B-17 Airplane for Airborne Use.

TO: President, Army Air Forces Board, Orlando, Florida.

1. Tests were conducted recently at this headquarters to consider the practicability of the B-17 heavy bomber airplane for use in airborne operations. The results of these tests were as follows:

a. Parachute.--The B-17 was examined to determine available exits and most suitable means of carrying personnel in the aircraft.

(1) Exits.--The only possible exits for parachute troops are the waist gun windows, the bomb bays, and the small door on the right rear of the waist guns. The waist gun windows, although suitable for emergency exits, would not do for parachute troops. The use of bomb bays is not considered feasible except for a very small number of men. Exits would have to be made from the cat walks and movement thereon is very restricted. The small door at the right rear of the waist gun compartment is not feasible for mass parachute exits because of its size and location. Although suitable for single emergency exits, it is so small and in such position as to make its use by parachute troops impracticable.

(2) Seating.--A total of thirty (30) fully equipped parachutists could be seated and transported in the B-17 without regard to weight and balance. Of the thirty parachutists twenty (20) would have to be seated in the bomb bay fitted with a temporary flooring. It would either be necessary to remove the flooring in order to make exits from the bomb bays, or move men to the rear and out the small door. Neither solution is satisfactory.

(3) Conclusions.--(a) The B-17 in its present form is not suitable for mass parachute operations.

(b) Necessary modifications would include a large door on either side of the rear of the bomb bay.

Incl 2

S/5410-5

b. Airlanding.

(1) In February 1944, this headquarters conducted tests of loading and lashing equipment of airborne and standard infantry divisions. All equipment was loaded into the bomb bay of the airplane since it was the largest available compartment and the only one with a large means of entrance and exit.

(2) It was determined that all items of heavy equipment had to be disassembled, hung from the bomb shackles, lashed to prevent vibration or movement in flight, and then unloaded and reassembled on arrival at destination. Times required for the above operations on main items of air-transportable equipment are summarized in Inclosure 1.

(3) A total number of fifty-five (55) soldiers and individual equipment, including three days' rations and one day of fire per individual can be transported on airlanding missions.

(4) It is believed that the B-17 airplane can be used as an emergency airlanding cargo airplane for both personnel and certain items of heavy equipment, but that such use is undesirable for the following reasons.

(a) Special training in disassembly and assembly of equipment must be given to all participating personnel.

(b) Training in loading items of equipment must be given to all personnel. Loading time factor is greatly influenced by experience of loading crews.

(c) Times of disassembly, loading, unloading, and reassembly are in some cases so excessive as to definitely slow up any operation. This is especially true in the case of four-wheeled vehicles.

(d) Items such as the 57mm AT Gun and 40mm Bofors AA Gun cannot be readily loaded into the B-17.

/s/ Josiah T. Dalbey
JOSIAH T. DALBEY
Colonel, Infantry
Commanding.

1 Incl.
Incl #1 - Loading Time Chart.

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*TIME IN MINUTES

EQUIPMENT	Disassembly	Loading	Unloading	Assembly
105 Howitzer M-3	10	40	10	20
Grader, road, towed type, leaning wheel	60	35	12	90
Trailer, ½-ton, 2 wheel, cargo	10	25	7	10
Kettle, Asphalt, Trailer mounted, cap. 110 gal.	7	25	9	10
Tractor, crawler type, 20 HP	210	120	45	150
Rooter, road, lever-operated, three tooth	15	20	8	20
Truck, ½-ton, 4 x 4	180	90	20	270
Trailer, dump, 2 wheel, ½-ton	3	35	10	3
Compressor, air, trailer mount, R50	10	10	5	10
Case tractor and Huff loader	120	180	20	120
Scraper, road, slip type, 3/4 cubic yd.		5	1	
105mm Howitzer, M-2	70	260	180	60
Gun, 37mm AT	9	15	8	15
75mm Pack Howitzer, M-8	7	20	10	10

*NOTE: Times given in above table were obtained using especially trained and experienced airborne loading crews.

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND (AMC)

29 MAY 1998

MEMORANDUM FOR DTIC-RSM
8725 John H. Kingman Road, Station 0944
Fort Belvoir VA 22060-6218

FROM: HQ AMC/SCYN[FOIA]
402 Scott Drive Room 132
Scott AFB IL 62225-5363

SUBJECT: Distribution Limitation on DTIC Documents (FOIA Request – Mr. Ian Sullivan)

1. On 27 March 1998, Ms. Kelly Akers from your office forwarded 10 documents to 11 CS/SCSR, Washington DC as responsive documents to a FOIA request from Mr. Ian Sullivan. Air Force was considered to be the controlling activity to determine releasability of the documents. Ms. Akers requested notification if the Air Force determined the distribution statements should be changed.

2. Five of the documents were sent to Headquarters Air Mobility Command, Scott AFB IL for release determination. Upon review, we determined documents listed below are releasable to the requester and the restricted distribution statement can be removed.

ATI 075959	Suitability of the B-24 Type Aircraft for Troop Carrier Operations
ATI 076730	Suitability of the B-17 Airplane for Troop Carrier Operations
ATI 087724	Tactical Doctrine of Troop Carrier Aviation
B972097 ✓	Operational and Tactical Suitability of the c-46A Airplane for Troop Carrier Operations – AAF Board Project No. (M-1) 105
B972518 ✓	Parachute Questionnaire Project

3. Direct any questions to Ms. Glenda Allen at DSN 576-4975 or 618-256-4975.

DOUGLAS R. WALTON, GS-12
Chief, Records Management
Directorate of Communications & Information

Per my telecon with Glenda Allen on 8 Jun 98, the documents can be marked "available to the public." It wasn't real clear in her letter.

Kelly Akers
DTIC-RSM
8 Jun 98